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<b>PRE-APPEAL BRIEF REQUEST FOR REVIEW</b>		Docket Number (Optional) <div style="text-align: center;">33226/980001; P8304</div>	
	Application Number 10/824,968-Conf. #7446	Filed April 15, 2004	
	First Named Inventor Alexander T. Garthwaite		
	Art Unit 2165	Examiner R. Hoffler	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <div style="text-align: center; margin: 20px 0;"></div> <p>I am the</p> <div style="display: flex; justify-content: space-between;"><div style="width: 55%;"><p><input type="checkbox"/> applicant /inventor.</p><p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p><p><input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>46,479</u></p><p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____</p></div><div style="width: 40%; text-align: center;"><p>_____ /Robert P. Lord/ Signature</p><p>_____ Robert P. Lord Typed or printed name</p><p>_____ (713) 228-8600 Telephone number</p><p>_____ October 22, 2007 Date</p></div></div> <p><small>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</small></p>			
<div style="display: flex; align-items: center;"><input type="checkbox"/> *Total of <u>1</u> forms are submitted.</div>			

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Alexander T. Garthwaite

Confirmation No.: 7446

Application No.: 10/824,968

Art Unit: 2165

Filed: April 15, 2004

Examiner: R. Hoffler

For: PARALLEL REMEMBERED-SET  
PROCESSING RESPECTING POPULAR-  
OBJECT DETECTION

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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Claims 41-57 are pending in the application and stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2002/0095453A1 ("Steensgaard") in view of U.S. Publication No. 2005/0015417A1 ("Lewis").

To establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143. Further, "the pending claims must be given the broadest reasonable interpretation *consistent with the specification*. ... When the specification states the meaning that a term in the claim is intended to have, *the claim is examined using that meaning*...." MPEP § 2173.05(a) (emphasis added). The term's meaning may be defined explicitly, or may be implicit from the context in which the term is used. *See* MPEP § 2111.01(III). Applicant submits that the Examiner has not satisfied the requirements of MPEP §§ 2143 and 2173.05(a), for at least the reasons given below.

Independent claim 41 recites, in part:

obtaining a first count-map for the section, wherein the first count-map is associated with a first thread...  
comparing the first entry with a popular-object threshold to generate a first comparison; and  
evacuating a first object from the first segment based on the first comparison to reclaim memory of the computer system for reuse.

For the purposes of this response, independent claim 41 is also representative of independent claims 49 and 57, which include substantially similar limitations.

1. **Steensgaard and Lewis do not teach “comparing the first entry with a popular-object threshold to generate a first comparison.”**

The claimed invention is directed to garbage collection based on the concept of “popular” objects. An object’s popularity is measured by how many references to the object exist. If the number of references to the object satisfies a “popular-object threshold,” the object is popular. Otherwise, the object is not popular. In other words, the popular-object threshold indicates the minimum number of references required to consider the object popular. This meaning of the term “popular-object threshold” is supported throughout the specification as filed. *See, e.g.*, p. 31, lines 1-15 of the specification as filed.

“During patent examination, the pending claims must be given the broadest reasonable interpretation *consistent with the specification*. ... When the specification states the meaning that a term in the claim is intended to have, *the claim is examined using that meaning....*” MPEP § 2173.05(a) (emphasis added). As discussed above, Applicant’s specification defines a “popular-object threshold” as the minimum number of references

required to consider an object popular. To satisfy the requirements of MPEP § 2173.05(a), independent claim 41 must be examined using this meaning.

Turning to the rejections of the claims, the Examiner has admitted that Steensgaard does not teach “comparing the first entry with a popular-object threshold to generate a first comparison.” Instead, the Examiner is relying on Lewis to supply what Steensgaard lacks. *See* Office Action dated June 22, 2007, p. 3.

Lewis is directed to garbage collection using a combination of reference counts and “depth values.” The reference counts are used to determine whether objects are live – that is, whether any active references to the objects exist. If a reference count is zero, the object is garbage. If the reference count is non-zero, the object may be live. *See, e.g.,* Lewis, [0005] and [0055]. Lewis does not appear to contemplate using reference counts for any other purpose. In particular, Lewis does not describe using reference counts to distinguish between popular and non-popular objects. Clearly, Lewis’ reference counting does not include the explicitly recited concept of the “popular-object threshold” in independent claim 41, using the proper definition of the term (discussed above).

Continuing with discussion of Lewis, the depth values indicate each object’s distance from a global data object. *See, e.g.,* Lewis, [0008] and [0063]. This distance is entirely a function of the number of references located *between* the global data object and the object in question. (This concept is similar to the concept of network ‘hops,’ for example.) The object could be referenced by dozens of other objects, but have a depth value of one. Similarly, the object could be referenced by only one other object, but have a depth value of three. *See, e.g.,* Lewis, figures 3A-3H. In other words, the depth values are entirely unrelated to the *number of references* to objects. Therefore, the depth values cannot possibly be used to distinguish

between popular and non-popular objects. Clearly, Lewis' depth values do not include the concept of the "popular-object threshold" recited in independent claim 41, using the proper definition of the term (discussed above).

In fact, Lewis is completely silent with respect of the concept of a "popular-object threshold," using the proper definition of the term. In relying on Lewis to teach this limitation, the Examiner is improperly ignoring the meaning provided in Applicant's specification, and has not satisfied the requirements of MPEP § 2173.05(a).

**2. Steensgaard and Lewis do not teach "obtaining a first count-map for the section, wherein the first count-map is associated with a first thread."**

Independent claim 41 requires obtaining a count-map that is associated with a particular thread (*i.e.*, the "first thread"). Because the count-map is associated with a particular thread, independent claim 41 must be directed to a multithreaded environment. Otherwise, it would not be necessary to specify that the count-map is associated with a particular thread. This reading of the claim is supported throughout the specification as filed. *See, e.g.*, p. 42, lines 21-23 of the specification as filed. In view of the requirements of MPEP § 2173.05(a), any alternative reading of the claims (*i.e.*, ignoring the fact that the count-map must be associated with a particular thread in a multithreaded environment) would be improper.

The Examiner has admitted that Steensgaard does not teach "obtaining a first count-map for the section, wherein the first count-map is associated with a first thread." Instead, the Examiner is relying on Lewis to supply what Steensgaard lacks. *See* Office Action dated June 22, 2007, p. 3.

To the contrary, while Lewis teaches a simple form of reference counting, Lewis is completely silent with respect to count-maps that are associated with particular threads. In fact, Lewis does not appear to contemplate associating *any* part of his invention with a particular thread in a multithreaded environment. Therefore, Lewis cannot possibly teach “obtaining a first count-map for the section, wherein the first count-map is associated with a first thread,” as explicitly required by independent claim 41.

**3. The Examiner has not satisfied the requirements of MPEP §§ 2143 and 2173.05(a).**

As discussed above, “the pending claims must be given the broadest reasonable interpretation *consistent with the specification*. ... When the specification states the meaning that a term in the claim is intended to have, *the claim is examined using that meaning*....” MPEP § 2173.05(a) (emphasis added). However, the Examiner is ignoring the meanings of terms provided in Applicant’s specification. Clearly, the Examiner has not satisfied the requirements of MPEP § 2173.05(a). Further, to establish a *prima facie* case of obviousness, “the prior art reference (or references when combined) must teach or suggest all the claim limitations.” MPEP § 2143. When the proper meanings of the terms are used, the references do not teach or suggest the recited limitations. Therefore, the Examiner has also not satisfied the requirements of MPEP § 2143. Accordingly, a favorable decision from the panel is respectfully requested.

Dated: October 22, 2007

Respectfully submitted,

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